



Date: June 25, 1981

Subject: PRIMARY PROCESSES R&D - TUCSON
MONTHLY REPORT, JUNE, 1981

From/Location: E. L. Cambridge/Tucson

To/Location: J. G. Kaufman/Louisville

BASIC RESOURCES RESEARCH

AD105 Alumina Process

A series of bench scale tests have confirmed the basic process chemistry as proposed in the Record of Invention. Further test runs with impurities introduced into the synthetic leach solutions have been carried out to examine impurity carry-over and distribution through the process. It is likely a processing step will be required to reduce P2O5 in the final product. We will shortly be doing a test series starting with a clay leach to see if impurity behavior is the same as for the synthetic solutions.

Lab data to-date is being assembled for a computer simulation of the material balance. This, plus further lab work to generate energy balance information, should then allow us to do an initial "conceptual process evaluation."

AlF₃ From Failed Pottinings

The preliminary meeting with Alcan is scheduled for June 26 in Montreal. A Record of Invention has been submitted to Intellectual Property covering John Snodgrass's proposal for an overall process scheme incorporating the Alcan D-process, some elements of the conventional CaF₂ to HF to AlF₃ process and some elements of the European fluosilicic acid process. We feel the synthesis may be novel as well as working with a combined HF/H₂SiF₆ feed stream for AlF₃ manufacture.

The conceptual process evaluation estimated a capital cost of \$44,000,000 to process 80,000 tons per year of pottining material. This corresponds to \$545/annual ton pottining. We will now look at preliminary commercial project economics.

A pottining sample is in transit from Sebree. Upon receipt we plan to start bench scale testing and characterization.

REDUCTION RESEARCH

AD108 - Composite Anode Process

Material has been ordered to setup a bench scale demonstration of this process. A report evaluating the complete spectrum of alternative process development is being prepared with a scheduled August completion date.

Alternative Electrolytes

Material has been ordered to setup a series of experiments to examine alumina solubility and electrolyte freezing points for an electrolyte composition range that we anticipate using in the Phase I Sebree Lithium electrolyte test. We anticipate expanding this to a wider range of electrolyte compositions.

DEVELOPMENT

Magnetics

Stan Becker is currently redrafting the ASV contract. The basic ordering information for the components of a magnetic field measurement probe has been obtained. An order will be placed shortly. We will have to design our own probe configuration. A quote of \$8,939 was received from Showa Denko K-K for their commercially available heat-flux meter and accessories. We plan to place an order. Delivery is quoted as four weeks from receipt of order.

Petroleum Pitch

Sebree has prepared a test design. Equipment modifications are necessary in the mix plant to keep this material segregated. Columbia Falls has agreed to do a lab evaluation of test electrodes from Ashland A-240 petroleum pitch. W. Hoffman is making arrangements with Ashland to send Columbia Falls a test quantity of approximately 25 gallons. An overall project outline will be prepared.

Columbia Falls - Basement Material Recovery and Recycling

We have conceptualized both a wet and dry beneficiation process. We are focusing on the dry process. Some initial electrostatic separations have been done at the University of Arizona, but we are currently being held up by our lack of analytical capabilities in this area. Recently we sent a spectroscopist to Columbia Falls to exchange procedures, etc., to try to get the analytical capability established in Tucson.

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PERSONNEL

June has been an active month for recruiting. Three or four offers will likely result from the current round of interviews. Hopefully, as a result, we anticipate filling the following positions:

Supervisor - Carbon Research
Senior Scientist - Reduction
Senior Scientist - Alumina

Dave Moran, Sebree, has accepted the position of Development and Technical Services Supervisor.

ELC:bbm

cc: R.W.Bartlett